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BUMED NEWS LETTER

a digest of timely information

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Form Letters:

Air Evacuation: Because of the great value of air transport in the evacuation of casualties and of the sick, the Bureau of Medicine and Surgery recommended the establishment of an air-evacuation service for patients in the Pacific area. This recommendation has been approved, and the service is now in process of accomplishment.

This air-transport service will be subject to fleet cognizance and control. It is contemplated that the facilities of this service will be appropriately integrated into future operational plans in order that maximal use may be made of it in distributing sick and wounded personnel to hospitals in the forward area and moving them from these hospitals to base hospitals in the rear (Pearl Harbor and the Continental United States).

In order to develop this service so that it may render the best possible medical care, a school for flight nurses has been established at Alameda, California. Nurses and pharmacist's mates will be trained in preparation for assignment to air-evacuation squadrons in the Pacific area. A flight surgeon of appropriate rank and experience with such other medical personnel as are required also will be assigned to each air evacuation squadron.

In order that this air-evacuation service may function properly in the Pacific area, it will be necessary, when long distances are involved, to provide staging and medical facilities at intermediate islands for the accommodation of the sick and wounded in transit. It will become the mission of the staff medical officer assigned to the air-evacuation command to make the appropriate recommendations and to assist in the development of staging facilities. He should render such other instructional and liaison assistance as may be required to effectuate and coordinate a practical working service and to provide information to hospitals and other medical activities which will make use of the air-evacuation service for their patients.

The intelligent cooperation of medical officers in charge of medical activities requiring the services of air transportation will be necessary if wise use is to be made of the service with a minimum of confusion. Air evacuation service for patients in the Pacific will be under the cognizance of Commander, AirForce, Pacific Fleet; Headquarters - Pearl Harbor, T. H.

Within the continental limits of the United States arrangements have been made for the use of naval aircraft which will be provided by the Naval Air Transport Service for the transportation and redistribution of patients. NATS has allocated and equipped aircraft for this specific use. Regular planned flight schedules indicating time and place of departure and of arrival have been published for the information of all medical activities who may require air transportation for patients.

BuPers Circular Letter No. 367-44 states that "in order to expedite the issuance of travel orders in connection with the transfer of patients, including the necessary attendants, when prior approval has been obtained from the Bureau of Medicine and Surgery. . . . . .orders may be issued by the medical officer in command of a naval hospital, and reimbursement for travel involved may be made by disbursing officers without further approval by BuPers."

At the present time flight nurses under instruction will accompany planes where possible in regularly scheduled flights. In some cases it will be necessary for local activities to supplement or provide medical attendants as may be required. It is the hope of the Bureau that as this service develops and becomes more thoroughly stabilized it will be possible to assign permanently flight nurses and pharmacist's mate attendants to all NATS aircraft employed for this purpose. All officers in command of naval hospitals and medical officers of other activities are urged to employ these services whenever practicable.

Further information pertaining to the availability of Naval Air Transport facilities for the transfer of the sick within the United States may be obtained by communicating with the local district medical officer. (Aviation Med., BuMed - J. C. Adams)

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Evacuation of casualties by air is often expedient and at times a military necessity. Many excellent articles have been written with respect to the selection of patients for evacuation by air, usually presenting lists of conditions that are adversely affected by the environmental conditions found at high altitude. In general, most patients who can be transported at all may be evacuated by air.

In selection of patients for transportation by air two basic physiological principles must be kept in mind: (1) When hypoxia exists or threatens because of shock, exsanguination, respiratory or cardiac embarrassment or other condition, subjecting the patient to a lowered partial pressure of oxygen may have serious consequences. (2) When the condition of the patient will deteriorate following the expansion of gas as is the case with injuries of the abdomen associated with perforation of the bowel or injuries of the chest associated with pneumothorax, subjecting him to lowered barometric pressure may have a deleterious effect. Often steps can be taken to put a patient into better condition for air transport, as by further resuscitation if he is in shock, or by aspiration of air from the chest if he has a pneumothorax. The limited facilities available in airplanes makes it unwise to transport by air patients who will require extensive or continued medical or surgical treatment.

Other factors also must be taken into consideration. Not infrequently, especially in short flights over water, one may have reasonable assurance that a low altitude can be maintained; or the projected flight may be of short distance. Furthermore, with respect to those patients who may be harmed by further increase in anoxia, the availability of adequate equipment for the administration of oxygen may increase the safety of flights at fairly high altitudes.

Finally, it need hardly be mentioned that in selecting cases (triage) for air evacuation one must keep in mind the fact that only by air transport can certain patients reach medical activities where they can obtain special types of therapy which they urgently need. In military operations involving retrograde movement the necessity for removing casualties by any means possible is apparent.

Consequently, in the selection of individual patients for transport by air the flight surgeon and the medical officer must weigh the advantages to be gained against the hazards incident to the journey. For example, a patient with a condition ordinarily believed to contraindicate travel by air may, through proper medical preparation for flight and adequate medical care en route, be safely taken at low altitude for a short distance to a point where better facilities are available for his care.

For further discussion of this important subject see Bumed Aviation Supplement of 5 January 1945 and 2 February 1945.

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The Effect of Sulfonamides on Persons Subjected to Simulated Altitude: Peterson et al. studied three men decompressed in a chamber to a pressure level corresponding to 20,000 feet. "Ascents" were made before and after the administration of sulfathiazole in full therapeutic amounts. Blood levels of sulfathiazole varied between 11.4 and 16.0 mg. per 100 c.c.

The oxygen saturation of the blood decreased with increasing simulated altitude, but showed no significant variation whether or not the subjects were receiving sulfathiazole.

At a pressure corresponding to approximately 20,000 feet (350 mm. of mercury) administration of oxygen to the subjects resulted in a rapid restoration of the blood-oxygen content to normal whether or not sulfathiazole was given.

The electrocardiogram showed no significant deviation during the sulfathiazole series which was not equally demonstrated in the control run. The changes which did occur consisted primarily of a progressive depression of

the T wave in lead I and a similar depression and inversion of the T wave in lead III.

The pulse rate under the influence of sulfathiazole was not significantly different from that during the control run. In both instances, acceleration accompanied decompression. The pulse rate returned to predecompression values immediately after the administration of oxygen at simulated altitude.

A significant amount of electroencephalographic abnormality did not appear in either the control or the medicated series. Comparison failed to show any remarkable difference between them.

It is worthy of note that all of the subjects experienced no untoward effects from taking sulfathiazole, nor did they experience any significant difference in the symptoms of anoxia when under medication.

The authors conclude that sulfathiazole in full therapeutic doses does not significantly alter the ability of normal persons to withstand the effects of altitude and that the use of this drug is not contraindicated for wounded personnel who are to be transported at altitudes of less than 10,000 feet without oxygen or more than 10,000 feet when supplementary oxygen is provided. (War Med., Jan. '45)

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DDT: A recent survey conducted in several large units in the Pacific area indicates a need for further dissemination of information on the subject of DDT. This new insecticide is now available outside the continental limits of the United States in quantities sufficient for large-scale application. It is stocked at the Naval Supply Depot, Oakland, California, and at certain advanced bases in the Pacific area. The fact that it is supplied only on requisition necessitates considerable advance planning in order that shortages during critical periods may be avoided.

In order to obtain maximal effectiveness from DDT, it is necessary that certain modifications be made in equipment designed for dispersing other insecticides. The type of sprayer nozzle used is probably of greatest importance, the disc-whirler type being the best. A majority of the nozzles now available have too large an opening in the disc; the openings may be soldered over and redrilled to produce an opening equivalent to 60 wire gauge. The decontamination sprayer is generally best suited to the dispersal of DDT, although the nozzle with which it is equipped for employment in connection with chemical warfare must be altered for use with DDT. This sprayer is lighter than the knapsack sprayer, and the latter is less durable and more likely to spill DDT on the skin and clothing of the operator. A new hand sprayer of three-quart capacity is now available. When the larger nozzle is used, it lends itself

well to the application of residual sprays to solid surfaces as well as to "puddle" larviciding. The accessory nozzle, with a smaller opening, allows this sprayer to be employed for producing finer sprays for use against adult insects on the wing.

Ordinary rubber hose and gaskets, with which many knapsack and decontamination sprayers are equipped, do not withstand the action of petroleum oils. Synthetic rubber fittings should be obtained for sprayers so equipped. The filling of requisitions for these items of equipment usually requires considerable time; therefore planning in advance and periodic checking on requisitions are advisable.

Three Insecticides in One: The employment of DDT against mosquito larvae, against adults and as a residual spray gives DDT three highly specialized and separate usages. Satisfactory results, however, depend upon the material's being used differently for these separate functions. As a residual spray, it must be applied in semi-coarse droplets, the nozzle being held from six to twelve inches from the surface being sprayed. Using five per cent DDT in emulsion, or in kerosene, the surface should be wet to a degree just below that at which drops are running off. The ideal amount is 100 to 200 mg. (2 to 4 c.c. of 5% solution) per square foot. The surfaces which insects frequent should receive special attention. Fine sprays tend not to adhere to surfaces in amounts adequate for prolonged effectiveness. If the material is properly applied, insects coming into contact with the crystals adherent to the surface as long as 1 to 2 months after treatment will be killed.

When DDT is employed as a larvicide, a semi-coarse spray should be used, as fine sprays will be blown away by the wind before they reach the surface of the water. Solutions of less than five per cent concentration are desirable, as it is difficult to spread evenly one quart of five per cent DDT solution over an acre of water surface. Two quarts of 2.5 per cent solution, however, may be evenly distributed over such an area.

Finely atomized sprays are required for killing adults in the open. The fine droplets are carried by the wind to the infested area. To produce fine sprays, nozzles with smaller openings and sprayers yielding higher pressures must be used, in contrast to those employed for residual spraying. When there is a light breeze and fine droplets are used, the operator should walk in 20-foot swaths. The effective swath width is less with strong winds and when coarse droplets are used.

The Toxicity of DDT to Humans is of a sufficiently low order to permit the use of DDT without danger to personnel if reasonable precautions are taken. (See Bumed News Letter, Vol. 4, No. 11, pp. 4, and "Manual on DDT Insecticide", NavMed 292.) In spite of the extensive employment of this insecticide, to date

there has been no reported case of poisoning. This is, in large part, the result of observing previously published precautions and should not be interpreted as an indication that any relaxation in the observation of those precautions is warranted. (Prev. Med. Div., BuMed - F. T. Norris)

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Paradichlorobenzene in Fly Control: The importance of fly control in preventing the spread of bacillary dysentery and other fly-borne diseases cannot be overemphasized. Paradichlorobenzene ($C_6H_4Cl_2$), sometimes called PDB, is a by-product of the chlorination of benzene that has proved to be a practical and efficient fly larvicide and insecticide. PDB is most effective in latrine pits, garbage pits, uncovered graves, destroyed shelters or other places where the heavy gas generated will not be rapidly dissipated.

No apparatus is required to apply the crystals to surfaces where flies are breeding. In handling PDB crystals no precautions against toxic effects are necessary. Larvicidal action is due to heavy fumes given off by the crystals. When PDB crystals are covered with earth the gas penetrates several inches in all directions. The larvicidal action progressively decreases as the temperature is lowered below 70° F.

Five to eight pounds of PDB are adequate for initial application to an eight-hole latrine pit. To increase the effectiveness of PDB, latrines should be built reasonably tight, lids should be kept closed, and the contents of the latrine must not be of thin consistency.

Although PDB has an established place in a general fly-control program, it should be used as an adjunct to other larvicides and insecticides and to other fly control measures such as other fly traps and screening, each of which has a definite use.

PDB is listed in the Standard Stock Catalogue as 51D193 Dichlorobenzene, Para. It is available in 200-pound drums. (Prev. Med. Div., BuMed - J. F. Shronts)

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Metrazol-Pentothal Antagonism: The use of metrazol as a means of increasing the safety of pentothal anesthesia has recently been suggested by Pickrell and Richards.

These authors emphasize two disadvantages incident to this type of anesthesia. The first is the apparent increase in depth of anesthesia or narcosis

which may occur at the termination of the operation when stimulation is no longer present, and which may be followed by a prolonged period of sleep. The second is the possible occurrence of a state of profound respiratory depression at any stage of the anesthesia, especially if large doses of pentothal have been used, and which in some instances may terminate in respiratory failure and death.

Pentothal, in common with other barbiturates, exerts a depressant action on the central nervous system and produces an effect varying from slight sedation to deep coma. In large doses the barbiturates depress directly the medullary respiratory center, and both the depth and the rate of breathing are decreased and irregular.

The antagonistic effect of metrazol in barbiturate poisoning is well known. According to Pickrell and Richards metrazol exerts a prompt and intense stimulating action on the vasomotor and respiratory centers in the medulla and on the cerebral cortex. The effect on the medullary centers is much more prominent when their functions are in a state of depression. When the circulation has been depressed by a hypnotic agent, metrazol causes a marked rise in blood pressure. It is absorbed rapidly when administered intravenously, and its action is practically instantaneous. As it is readily soluble in water, it is absorbed rapidly when given by subcutaneous injection or by mouth. In large doses it possesses a strong convulsant action. It is rapidly detoxified, and its effects are not cumulative.

The authors explored the possible value of metrazol in the prevention of prolonged pentothal narcosis and in the resuscitation of patients in profound respiratory depression.

Seven cases are reported in which profound respiratory depression developed during anesthesia with pentothal. In each case the intravenous administration of 5 c.c. of 10 per cent aqueous solution of metrazol (3 c.c. in one case) was followed by prompt improvement. In each case the operation could be resumed with cautious administration of additional pentothal. In four instances a subsequent injection of 3 c.c. of metrazol was made. No untoward reactions nor ill effects were noted, and no convulsions occurred.

Following experiments using animals, in which it was found that the administration of metrazol would arouse rabbits, but not dogs, from deep pentothal anesthesia, the effect of metrazol in shortening the recovery period after pentothal anesthesia in man was investigated.

In control studies in which no metrazol was given, the time required for recovery from pentothal anesthesia varied from 1-1/2 to 12 hours, depending upon the weight of the individual, the dose of anesthetic given and the magnitude

of the operation. The pentothal was administered in 2.5 per cent solution in combination with a mixture of 5 per cent dextrose in 0.85 per cent saline. The technic of intermittent administration was employed. Continuous administration of oxygen in high concentration was maintained during the entire period of anesthesia.

In a series of 300 patients given pentothal in the same amounts and manner as the control group, 5 to 8 c.c. of metrazol were administered intravenously at the conclusion of the operation. The recovery period, except in 16 instances, was not longer than 45 minutes. Frequently recovery of consciousness took place almost immediately. In the 16 patients mentioned, all of whom had received the maximal dose of 2 Gm. of pentothal, recovery was delayed for not more than 1-1/2 hours. (Abstracted from ms. of paper to be published.)

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The work of Pickrell and Richards presented in abstract in the above item was called to the attention of the Bureau by Dr. Frank Lahey. The following comment on its practical application was written for the Bumed News Letter by Doctors Eversole, Hand and Nicholson of the Department of Anesthesia of the Lahey Clinic:

The experimental work of Pickrell and Richards and other investigators has demonstrated the efficacy of the convulsant analeptics (notably metrazol) in the treatment of barbiturate overdosage. Our clinical observations have borne out the observations of Pickrell and Richards that this drug is effective as an antidote for pentothal overdosage.

The two other drugs most commonly used for barbiturate overdosage are coramine and picrotoxin. The value of coramine is very doubtful; in fact, some observers believe that it at times increases depression. Picrotoxin is a more powerful convulsant (all of these drugs are convulsants and hence are potentially dangerous) and does have a more prolonged action than does metrazol. It is probably not as safe a drug as metrazol. The routine use of these analeptic drugs with pentothal anesthesia is not to be recommended. They are all cerebral irritants and as such may cause convulsions.

The first and most important step in the treatment of pentothal overdosage (as well as overdosage of any type of drug which causes respiratory depression) is artificial respiration. The artificial respiration should be carried out with oxygen if it is available. Artificial respiration, of course, presupposes the establishment of an adequate and patent airway. This means tracheal intubation if necessary.

Secondly, metrazol should be employed as an adjuvant to artificial respiration. The time consumed in the preparation and administration of this drug must not prolong the interval before artificial respiration is instituted.

A third step in the management of these patients, of course, is the maintenance of circulation by means of adequate fluid therapy and vasopressor drugs as indicated.

We cannot stress too much the importance of a free airway and adequate respiratory exchange. Artificial respiration is the only resuscitative measure of proved effectiveness.

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While metrazol is not on the Medical Supply Table, it can be obtained commercially. It is suggested that this drug be used as an adjunct to artificial respiration and other resuscitative procedures of recognized value when respiratory failure occurs during pentothal anesthesia. Until further confirmatory studies demonstrate that the use of metrazol routinely to shorten the recovery period following pentothal anesthesia is entirely safe, its employment for this purpose is not recommended.

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Conservative Treatment of Acute Appendicitis: In naval medicine situations may be encountered, particularly by corpsmen on independent duty, in which a competent surgeon is not available or adequate facilities, and in which operative intervention in acute appendicitis may be hazardous. (See Bumed News Letter, Jan. 21, '44.) It has been recommended that in such situations conservative treatment be supplemented by the use of sulfonamide or penicillin.

Lt. (jg) C. M. Riley (MC), USNR, has recently reported a case which is of considerable interest because the patient was operated on approximately three days after conservative therapy was started.

"An 18-year old seaman reported at sick call having had vague abdominal pain for about twenty-four hours and anorexia, but no frank nausea or vomiting. On examination he was found to have slight right-rectus rigidity and tenderness directly over McBurney's point, as well as rebound tenderness referred to this area. There was moderate generalized tenderness high in the rectum. Temperature was 100.4° and white count was 14,700. A diagnosis of acute appendicitis was made. Because of the unsatisfactory conditions for operating aboard an old destroyer, medical treatment was selected. He was given sulfadiazine, 4 Gm.

immediately, followed in four hours by 2 Gm., with 1 Gm. every four hours thereafter. The large initial doses were given in an effort to produce a high blood level rapidly. Six hours after the first dose physical findings were unchanged but the temperature had fallen to 99.6° and the white count to 12,000. After twelve hours there had been no appreciable change in signs or symptoms, but the temperature had fallen to 97.8° and the white count was 11,000. The next day the temperature remained normal and he began to have a little appetite. Significant physical findings at this time were limited to a diffuse abdominal tenderness. On the third day the ship made port and the patient was transferred to the hospital. At the time of admission the examining surgeon could find no signs of acute appendicitis but decided to operate because of the characteristic history. Operation was performed approximately seventy-six hours after the beginning of treatment. The appendix was found to be retrocecal; its tip was extremely swollen and engorged, but not gangrenous, and the lumen contained fluid which appeared to be purulent. Some difficulty was encountered in removing the appendix because of its position, so it proved fortunate that the operation had not been attempted at sea."

Lt. Riley comments as follows:"Despite the symptomatic and laboratory evidence of improvement in this case of acute appendicitis during a seventy-six hour period on full sulfadiazine dosage, the appendix on removal appeared to be in a highly dangerous state. From the therapeutic point of view this would suggest that in medically treated cases of this condition it would be well to continue chemotherapy longer than is indicated by the clinical course. Probably a minimum of five to seven days would be adequate." (Atlantic Fleet Med. News Ltr No. 12-44, Dec. 10, '44)

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Arteriovenous Aneurysm: The following is taken from an editorial by Col. Daniel C. Elkin which appeared in the February 1945 issue of Surgery, Gynecology and Obstetrics:

The most common lesion resulting from direct injury to blood vessels is the establishment of an arteriovenous fistula. This may be produced by the smallest of fragments. Since the fistulae may be small and symptomless in the early stages, they are often overlooked unless careful examination of every wound is carried out. A small missile may produce an external injury so slight as to be regarded as of little importance, but at the same time cause extensive damage to the underlying artery and vein.

Frequently patients are treated only for varicose veins and ulcers when an arteriovenous aneurysm, responsible for this condition through preventing proper nourishment of the part, is the cause. Signs of cardiac failure may develop before an arteriovenous aneurysm is discovered. The presence of damage to

blood vessels may be overlooked in inconspicuous wounds or in wounds involving serious injury to nerve, bone or soft tissue, because the attention of the examiner is diverted to more conspicuous and seemingly more important lesions. It must be borne in mind that an individual may have more than one arteriovenous fistula.

The differentiation of a false aneurysm from an arteriovenous fistula is important, since the sequelae and the general and local effects, as well as the treatment, are altogether different in the two lesions. The differential diagnosis is not always easy, but as a rule the arteriovenous aneurysm is characterized by a continuous vibratory thrill and a loud, rough, continuous murmur with systolic intensification, whereas in the case of the false aneurysm there is a distinct pause between the systolic and diastolic phases, and often the murmur is heard only in systole. In an arteriovenous communication the murmur is usually transmitted for some distance on either side along the course of the vessels, whereas in an aneurysm confined to an artery the murmur is rarely heard beyond the confines of the dilatation.

Certain general and local effects follow the establishment of an arteriovenous fistula. These are dependent upon the size of the opening, the vessel involved, and the duration of the lesion. Early signs vary. The extent of initial external bleeding is variable and can usually be controlled by pressure, although in some instances ligation may be necessary. After an interval of time the patient may discover the thrill so characteristic of this condition. In other instances it may be found only after careful examination.

Establishment of a fistula introduces a circuit into the vascular system. The peripheral resistance in this circuit is lowered, the capillary barrier being eliminated, and arterial blood is short-circuited directly from artery to vein. In a fistula of a large vessel, like the femoral, one-fifth to one-half of the blood ejected by the left ventricle may be shunted. If the fistula is sufficiently large, enough blood may be diverted into the venous system, proximal and distal to the fistula, to produce a general drop in blood pressure and even death. In most instances, the blood-pressure changes are not extreme; the systolic pressure soon returns to normal, but the diastolic pressure, as a reflection of the general lowering of peripheral resistance, remains lowered. The effect on the blood pressure is similar to that seen in aortic insufficiency, although in the latter the leak is into the left ventricle while in arteriovenous aneurysm it is into the venous system. Increased venous pressure in the circuit proximal to the fistula reflects the increased venous filling. The heart accommodates to the increased venous return by acceleration of rate and increased strength of contraction, effecting an increase in cardiac output. Soon an increased circulating blood volume is added as another compensatory mechanism.

The normal heart usually can tolerate the increased demands made upon it, but as the "leak" in the circulation persists, and actually becomes greater as the fistula increases in size, difficulties appear. The heart begins to dilate and circulatory symptoms appear. Dilatation and later hypertrophy result from the increased work the heart is called upon to perform, and circulatory failure may supervene. The artery proximal to the fistula dilates, and the dilatation may extend as far back as the heart itself. As suggested by Holman, this may be caused by the great increase in blood mass in the shorter circuit which is the result of the decrease in resistance at the site of the fistula.

The immediate effect of temporary occlusion of the fistula is redistribution of the circulating blood volume. Blood no longer flows freely through the opening into the venous system and therefore temporarily overfills the general circulation. The blood pressure rises and the heart may distend. Reflexly, via the carotid sinus, the heart is slowed (Branham's sign), and some peripheral dilatation occurs. Usually, a temporary rise in systolic and diastolic pressures occurs. Following excision of the fistula, the diastolic pressure returns to normal. There may be a temporary increase in size of an already dilated heart, but with return of the blood volume to normal (often after several days) the heart returns to its normal size, unless irreparable myocardial damage has taken place.

There is no condition which produces such an extensive collateral circulation as does the interposition of a fistula between an artery and a vein. This collateral circulation is of little value when the fistula is open, since most of the blood in the collateral vessels passes back through the fistula without reaching the part beyond it. However, it is important that sufficient time be allowed to elapse prior to operation for collateral circulation to develop, as a well-developed collateral system permits excision of the fistula with little fear of resulting gangrene.

The effect on the heart as well as the local effects demand that an arteriovenous fistula be eliminated. Time allowed for development of collateral circulation (two or three months) should not be great enough to allow pronounced cardiac damage to occur or nutrition of the part involved to be affected. Mere ligation of major vessels will not cure the lesion and more often than not leads to gangrene of a limb. On theoretical grounds it would seem best to repair the opening in the artery and vein and at the same time maintain their continuity. Such a procedure is technically difficult and frequently results in secondary hemorrhage or recurrence of the lesion. Since the collateral circulation is of such abundance, quadruple ligation of the proximal and distal segments of the artery and vein and complete excision of the fistula is the method of choice. Where technical difficulties preclude this procedure, the fistula may be eliminated by ligation and division of the main vessels followed by closure of the communication through the opened vein, by the passage of mass ligatures about the area

of the fistula, or by separation of the vessels and closure of the opening in each. Nutrition of the area distal to the fistula will immediately improve since the blood formerly diverted will reach the part through the collateral vessels.

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The Nature of Post-Traumatic Headache: Extensive studies have been carried out on 35 patients with post-traumatic headache. "With one exception the headaches have all been of low intensity, and steady, dull aching in character. The site was commonly in or close to muscle attachments. Several patients had a sore spot representing the point of trauma. This point was usually two or more inches distant from the center of aching pain. There was great variation in the frequency and duration of the headaches and in the time of day in which they occurred. Nausea and vomiting were rare. Hyperesthesia and photophobia were common. When a tender spot was present, the tenderness fluctuated in degree with the severity of the headache. Pressure sometimes accentuated the discomfort and sometimes relieved it. Injection of the tender spot with procaine uniformly relieved the soreness and the aching pain. Most of the patients showed increased irritability and intolerance in their social milieu. A sleep disorder was found in nearly all of the patients." (OEMcmr-485, Progress Report #1, Wolff, Cornell Univ., CMR Bulletin #25)

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Suspension-Traction Treatment of Fractures: A recent War Department Technical Bulletin discusses the application of suspension traction in the treatment of fractures, with particular reference to femoral fractures. Especial attention is called to the value of this form of treatment of fracture of the femur during the late as well as during the early stages of bed care. Patients with fractures of the femur are usually evacuated from field units to forward hospitals in the Army leg splint, using the litter bar, ankle strap and five triangular bandages. These patients are evacuated from forward hospitals to fixed hospitals in the communications zone either in skin or skeletal traction suspended and fixed in an Army leg splint or in a plaster hip spica. (The application of multiple pins or wires through fracture fragments incorporated in plaster in order to maintain reduction is not recommended.) In fixed hospitals overseas, fractures of the femur should be treated by suspension traction until sufficient union has been obtained to permit safe transportation of the patient to the zone of the interior with the fracture immobilized in a double or "one-and-one-half" plaster hip spica. After arrival in the hospital in the zone of interior in which the patient will remain, the spica cast should be removed and the suspension-traction treatment again instituted if further immobilization is indicated. Plaster immobilization is desirable only for transportation of fractures of the femur. The suspension method not only will lead to earlier return of joint motion

and muscle strength than any other method, but also is the best means of preventing angulation and overriding.

In the definitive treatment of fractures of the femur it is important that in the early stages, traction be sufficient to overcome the pull of the strong thigh muscles and to maintain the reduction of the fracture, but that this traction not be so great that distraction or separation of the fracture fragments occurs. This method of treatment requires daily attention to details in order that the reduction of the fracture be maintained, that the apparatus be neat in appearance, and that it be comfortable at all times.

Skin traction, because of its simplicity and safety, is preferred whenever its use is possible. Adhesive tape and gauze bandage are commonly used, but a flannel bandage with a skin-adherent is preferred because it is more comfortable and durable.

After application of the skin-adherent to the unshaven skin, the strips of flannel are cut to proper length and applied with the rough side to the skin, followed by firm, smooth bandaging. The success of skin traction depends on the care with which it is applied.

Skeletal traction is indicated where skin traction cannot be used, or where it will not be effective because of the amount and duration of traction required. A Kirschner wire is preferred to a Steinman pin because it is easier to apply and produces minimal trauma, but it is imperative that a bow be used which keeps the wire under tension. Rotary and lateral motion of the bow must be prevented. Solid Steinman pins are at times effective. These do not require a bow and are preferred where the patient is, of necessity, to be transported in a splint with skeletal traction or with the pin incorporated in a cast. Jointed Steinman pins are dangerous and obsolete and should not be used. Ice tongs for skeletal traction on long bones are not approved because of the difficulty of satisfactorily applying them and the subsequent danger of their slipping and causing trauma to soft tissue. The insertion of the pins or wires for skeletal traction or fixation should be done under rigid aseptic precautions and preferably in the operating room. As far as possible, these pins or wires should not be inserted in the vicinity of traumatized skin or in the vicinity of a future operative incision, since even a healed pin tract must be considered a site of potential infection. Nerves, vessels and joints should be scrupulously avoided. Pins which completely transfix the extremity should not be inserted in the humerus or the proximal two-thirds of the femur. Obviously, a wire or pin inserted into bone for skeletal traction should engage sufficient bone so it will not cut through and pull on the soft tissue.

In treatment with suspension traction, the injured extremity should be so suspended in the splint or hammock, and so balanced by weights, that it can

move with the movement of the body and still furnish effective immobilization of the fracture. Rigid fixation of the extremity to the bed or fracture frame is not desirable. Supporting slings should be smooth and well padded, and rope knots should be secured, as by adhesive tape. Special attention must be given to the position and resulting pressure of the ring when a ring splint is used. So far as possible, by adjusting the position of the patient and the bed, the weight of the body is used for counter-traction and a minimum of weight is applied to hold the splint in position. If a wound is present in the ischial region, the half-ring of the splint may be reversed to the front of the thigh.

A trapeze bar hung on the Balkan frame at the right height to be used by the patient in pulling himself up is indispensable as an aid to changing position in bed and nursing care.

The standard Balkan frame is both adjustable and adaptable. It allows the application of any form of traction to from one to four extremities in any position desired.

During the early stage of fracture treatment, active motion must be avoided. However, it is desirable that subkinetic muscle contraction, such as quadriceps exercise, be instituted early in order to prevent atrophy and stiffness. After the fracture of a femur has partially united, support and traction are still required, but motion of the knee can be started. This is best accomplished with the use of a Pierson attachment to the Army leg splint which allows both active and passive motion of the knee. Traction is to be maintained until all support is discarded and free recumbent exercise can be practiced. As soon as the degree of union permits, motion of the knee should be practiced at regular and frequent intervals. It is urgent that knee motion be restored by regular exercise as soon as possible.

Since the ischial caliper to be worn after the suspension-traction treatment is discontinued has no joint at the knee, it must be removed regularly for exercise of the knee after the patient becomes ambulatory. (TB MED 133)

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While the chain of evacuation described in the above item applies to the Army, the fundamental orthopedic principles involved are generally applicable and can be adapted to methods of evacuation used in Marine Corps and Amphibious operations.

* * * * * *

Whole Blood and Electrolyte Therapy of Experimental Burns: Observations on dogs subjected to severe burns (35 to 40 per cent of body surface) suggest

that the usual anemia seen during the convalescent stage can be largely prevented if initial therapy combines transfusion of whole blood and oral administration of electrolyte solution. When such therapy was used, the hematocrits were not more elevated than in dogs not treated or treated with plasma. These findings are in agreement with observations on patients who, when whole blood was given, did not have an anemia during convalescence. When whole blood is not given until the convalescent period, more is needed to combat anemia than when the blood is given initially.

In addition data are presented which suggest that to obtain best results the oral electrolyte solution should be given early and, if vomiting occurs, the intravenous route of administration should be resorted to until fluid can be retained when given by mouth. (OEMcmr-432, Progress Reports #4 and #5, Hirshfeld and Smith, Wayne Univ. - CMR Bulletin #25)

* * * * * *

Biologic False-Positive Serologic Tests for Syphilis: Although it has been known for many years that certain diseases and conditions at times result in positive blood tests for syphilis in the absence of this disease, only recently has the problem of biologic-false-positive tests and their differentiation from those due to syphilis become one of general concern. With the widespread adoption of mass blood testing and with more careful serologic study of patients suffering from a variety of disorders, it has become evident that false-positive reactions may be observed in healthy as well as ill persons, and that the differentiation of such false reactions from those due to syphilis is often difficult and, with presently available methods, sometimes impossible.

It is now clearly established that positive reactions occur in almost all patients with treponemal diseases (yaws and pinta), and at least temporarily in almost all cases of malaria, while 40 to 80 per cent of leprous patients also give positive serologic tests for syphilis. Evidence is accumulating that in certain exotic diseases (rat-bite fever, relapsing fever and perhaps leishmaniasis, trypanosomiasis and typhus) false-positive reactions may be found, although the frequency of their occurrence is unknown. More common diseases and conditions known to cause similar false reactions include vaccinia (12 to 20 per cent), infectious mononucleosis (about 20 per cent), pneumonia (pneumococcal and atypical), as well as minor upper respiratory infections. A small number of non-syphilitic, presumably normal individuals may be "carriers" of false-positive reactions for long periods of time - months, years or perhaps for life.

Particularly in the Armed Forces, the differentiation between positive blood tests due to syphilis and those due to other factors has become of paramount importance. Such differentiation is rendered difficult by multiple immunizations, some of which are known to cause false-positive reactions; by the

variety of diseases, tropical and otherwise, known to cause false-positive reactions and to which large numbers of troops are exposed, and by the high incidence of syphilitic infections in many areas.

During the past year, a small group of investigators under OSRD (CMR) contracts has endeavored, in collaboration with certain other laboratories, including that at the Army Medical School, to study the problem of false-positive serological reactions in an attempt to develop methods of differentiating between the "true" and "false" reactions.

Results: Certain physical and chemical characteristics of the substance responsible for false reactions have been identified, some of which appear to distinguish it from the reagin of syphilis:

(a) By fractional precipitation it is precipitated in fractions of G-I and G-II.
(b) The sum of flocculation titers of globulin fractions of a syphilitic serum is less than that of the whole serum, whereas with serum which gives a biologically false reaction it is greater than that of the parent serum.
(c) Addition of crude albumin to globulin fractions of sera giving false-positive reactions completely prevents flocculation with lipoidal antigen.
(d) Antibodies in syphilitic sera are more resistant to inactivation by heat.

* *

Beard and Neurath summarize as follows the present status of their investigative work on this important problem:

Electrophoresis: Electrophoretic analyses were made on 13 normal, 25 syphilitic and 45 biologic-false-positive sera. Sera from patients with syphilis differed from normal sera in decreased albumin and increased gamma-globulin content, the difference being both relative and absolute. Biologic-false-positive sera showed differences from normal sera qualitatively similar to those of syphilitic sera but of smaller magnitude.

Fractionation: The distribution of the reactive antibodies among the various serum components has been determined by (a) fractional precipitation with increasing concentrations of ammonium sulphate, and (b) precipitation of globulin with CO_2. Analyses of some 200 sera showed (a) that fractions G-I and G-II contained most of the serologic activity, whereas crude albumin remaining after precipitation of G-III was always serologically inactive; and (b) that the sum total of the individual titers of the syphilitic fractions was less than that of the whole serum, whereas with biologically false-positive (BFP) sera it was greater than that of the parent serum. This suggested an inhibitory effect of crude albumin on the reaction of antibodies of BFP sera.

Inhibition and Redispersion: Addition of crude albumin to globulin fractions from BFP sera causes complete inhibition of specific flocculation with lipoidal antigen as well as redispersion of floccules formed before the crude albumin was added. This was not the case with syphilitic sera. The heat-stable inhibiting component of the albumin fraction has been found only in human sera. Crystalline human serum albumin does not have this inhibitory effect.

Heat Stability: Experiments with 50 syphilitic and BFP sera were made by heating the samples for 20 minutes at from 56° to 66°. It was found that the antibodies of BFP sera were more susceptible to heat inactivation than those of syphilitic sera.

Adsorption on Calcium Phosphate: The antibody of syphilis has been purified by adsorption of whole sera on freshly precipitated calcium phosphate followed by precipitation of the eluate with ammonium sulphate. While about 80 per cent of the total antibody activity of syphilitic sera is adsorbed by the calcium phosphate, in experiments with BFP sera no titer has been found in the eluate.

These studies indicate the existence of chemical and immunological differences between syphilitic and BFP sera. The application of these findings to the development of a practical method of differentiation is being explored.

On the basis of these results a test has been devised using small amounts of serum to discriminate between true and false-positive serological reactions. It is expected that preliminary validation studies involving tests of known BFP sera of various titers will be completed within three months. With the cooperation of the Army, of various clinics, and of the officers of the United States Public Health Service in Puerto Rico, several hundred BFP sera are being collected for examination. (OEMcmr-255, Duke Univ.)

* *

Other investigations carried on by Lund may be summarized as follows:

Work originally directed at determining the distribution of reagin-like substances in the general population in the absence of syphilitic disease indicated that a reacting substance was present in low concentration in about 50 per cent of the population, more commonly in young people and females. The substance was different from the reagin of syphilis and was less constantly present; it deteriorated more rapidly. It was heat labile, somehow related to cold temperature and more readily adsorbed to cholesterol crystals. It did not perceptibly fix complement by ordinary technics, but its flocculation was inhibited by complement. The false reactions were more common and stronger with the separated euglobulins of the serum.

Studies of the nature of inhibition by raw serum inhibitor, the basis of Rein's "verification" test, showed the substance responsible probably to be complement. No qualitative difference in this phenomenon was noted with false-reacting sera and syphilitic sera. There may be a quantitative or a zonal difference. (OEMcmr-202, Western Reserve Univ.)

* * * * * *

Salmonellae: Animal Source: Animals are the main reservoir of Salmonellae. Salmonellosis may be transmitted to man following the ingestion of inadequately-cooked food substances from animals which are infected. The meat of fowls (chickens, turkeys, ducks, etc.) is the most frequent source of infection of man. A recent survey has revealed that 41 of the 47 types of Salmonellae found in birds correspond to types isolated from man.

Commissaries customarily receive fowls that have not been drawn. Preparation of birds for cooking and the cooking process itself must, therefore, be carefully and adequately done, since Salmonellae are to be found mainly in the visceral organs.

A little known but important means of spreading and perpetuating Salmonellae is the transmission of infection through eggs. Eggs may become infected in the ovaries and oviducts of birds harboring the organisms or through penetration of the unbroken shell by organisms in fecal matter which is deposited thereon.

The finding of certain types of Salmonellae in egg powder suggests that this food substance should be used only after it has been found to be bacteriologically safe or after it has been subjected to cooking processes which are adequate to destroy the bacteria. The methods now employed in the manufacture of egg powder obviously do not eliminate these organisms. (Nav. Med. School, Bethesda, Md. - L. A. Barnes)

* * * * * *

Enteric-Pathogen Survey: In several items during the past twenty months attention has been called to the importance of obtaining accurate identification and cataloguing of bacillary incitants of diarrhea and dysentery. Facilities for centralizing this service have been provided by the establishment of the Enteric-Pathogen Laboratory, Naval Medical School, Bethesda, Maryland. There is need for more information concerning the incidence and prevalence in the various geographic localities, particularly the combat areas, of the types of Shigellae and Salmonellae; similar data are highly desirable with regard to members of the Paracolon, Proteus and Pseudomonas groups.

Certain laboratories in the field have obtained Shigella Diagnostic Sera from the Medical Supply Depot in Brooklyn, New York. Typing sera for the

HISTORY SHEET - ENTERIC PATHOGEN SURVEY

NAME _____ DATE _____ LOCAL CASE NO. _____

RATE or RANK _____ RACE _____ SEX _____ AGE _____

PRESENT DIAGNOSIS _____ WARD or AREA _____

PERMANENT RESIDENCE _____ FOOD HANDLER (Yes or No) _____

SYMPTOMATOLOGY OF PRESENT ILLNESS (If Any) - INDICATE BY YES OR NO

DIARRHEA _____ HIGHEST NO. STOOLS PER DAY _____ BLOOD IN STOOL _____

MUCUS _____ PUS _____ ABD. CRAMPS _____ NAUSEA _____ VOMITING _____ NO. TIMES___

FEVER _____ MAX. TEMPERATURE _____ HOSPITALIZED _____ NO. DAYS IN BED _____

DATA ON PREVIOUS GASTROINTESTINAL ILLNESS AND TRAVELS

(If more than one attack occurred, fill out ADDITIONAL SHEETS for the information below and clip to the original)

COUNTRY AND PLACE	DATE ENTERED	TIME IN AREA	G.-I. ILLNESS (Yes or No)

SYMPTOMATOLOGY OF PREVIOUS ILLNESS (If Any) - INDICATE BY YES OR NO

DIARRHEA _____ HIGHEST NO. STOOLS PER DAY _____ BLOOD IN STOOL _____

MUCUS _____ PUS _____ ABD. CRAMPS _____ NAUSEA _____ VOMITING _____ NO. TIMES___

FEVER _____ MAX. TEMPERATURE _____ HOSPITALIZED _____ NO.DAYS IN BED _____

DIAGNOSIS AND BY WHOM _____

DRUG TREATMENT _____: ARSENICAL _____ EMETIN _____SULFONAMIDE _____

REMARKS ON OTHER CASES AT SAME TIME AND PLACE _____

PRESENT CULTURE MATERIAL _____ DATE TAKEN _____ CODE NO._____

RESULT OF LABORATORY EXAMINATION _____ DATE _____

PREVIOUS OR SUBSEQUENT CULTURES AND MATERIAL EXAMINED _____

(L. A. Barnes)

other genera mentioned are not, however, generally available at present. Regardless of whether organisms belonging to the enteric-pathogen group have been typed by epidemiology, hospital or other laboratories, the Naval Medical School desires that adequately representative cultures be forwarded for inclusion in cataloguing and analyzing procedures.

It is essential that cultures sent by mail be packaged in conformity with Postal Regulations in order to ensure delivery of intact specimens.

If full value is to be realized from type identification, clinical and epidemiological data concerning the cases from which cultures are isolated must be forwarded with the official letter of transmittal. Such information will be transscribed to punch cards for statistical analysis. The importance of collecting the materials described has been previously emphasized (BuMed Circ. Ltr. Y-ME, P2-3/P3-1(064); Bumed News Letter, Sept. 1, '44). Cooperation is requested of all officers in charge of laboratories equipped to carry out definitive bacteriology.

A case-history sheet, or card, providing for the entry of the desired information is being used with considerable success; a sample is reproduced on page 21 as a suggestion. (Nav. Med. School, Bethesda, Md. - L. A. Barnes)

* * * * * *

Method of Distribution of Training Films: When a training film has been evaluated by the Joint Board of Review, a recommendation on distribution is made to the Distribution Unit, Production and Distribution Section of the Bureau of Naval Personnel. This Unit then prepares requests to the Bureau of Aeronautics for initial distribution of the film. A large proportion of the prints are sent to Training Aids Sections and Libraries, which handle virtually all distribution to ship and shore activities. In certain instances activities may receive films by direct application to BuAer. Training Aids Sections and Libraries submit requests 60 days in advance of their requirements in order that BuAer may meet their needs.

Reports of films on hand are submitted periodically by the Sections and Libraries. This enables the Distribution Unit to transfer surplus stock from one district to another without delay.

All requests for 16-mm. motion picture projection equipment, 35-mm. film strip equipment, and record players are submitted through the Distribution Unit. The projectors, both still and motion picture, are supplied by BuShips upon approval by BuPers. The record players are supplied by BuPers. (Prev. Med. Div., BuMed - C. C. Clay)

Maritime Quarantine with Reference to Naval Vessels: The Bureau has received a number of complaints from quarantine officers of the U. S. Public Health Service relative to naval vessels with a medical officer aboard coming into ports of the United States without passing through quarantine when such was indicated.

The mere presence of a medical officer on a naval craft does not exempt it from the necessity of being boarded by a quarantine officer. The U.S. Public Health Service has been most liberal in its interpretation of the regulations in order to accommodate naval vessels. However, there are a number of conditions under which naval vessels with medical officers aboard must be granted pratique by a quarantine officer before they may legally enter a port of the United States. In particular, these are conditions in which a vessel has been in port where a quarantinable disease exists and where communication has been of a type liable to convey infection. Under conditions where vessels are in such ports, unless specific procedures have been carried out which render the vessel not liable to convey infection, they must enter quarantine before coming alongside in a port of the United States. Attention is invited to General Order No. 157 and Navy Department Bulletin, Cumulative Edition, Dec. 1943, 43-1616. Unless the medical officer can under oath subscribe to either the first or the second statement of paragraph 3 of this general order in his declaration, the "Q" flag must be flown.

Violation of quarantine laws and regulations is classified as extremely serious offenses and in view of the fact that the U. S. Public Health Service has permitted the Navy to assume a considerable share in the enforcement of quarantine regulations, a heavy obligation rests on Naval personnel to live up to the spirit and the letter of the law.

For the benefit of medical officers in the Navy the following summary of Maritime Quarantine Regulations follows:

U. S. NAVAL VESSELS REQUIRING U. S. PUBLIC HEALTH SERVICE QUARANTINE PROCEDURES

The following naval vessels must fly the "Q" flag on entering any port in the United States, its territories or possessions and be boarded by an officer of the U. S. Public Health Service or by an U. S. Navy Quarantine officer where one is present:

1. Those without a medical officer (physician) aboard or in the convoy or squadron.

(A) From any foreign port.

If a vessel calls at a foreign port before or after calling at a non-continental United States port, it is considered to be from a foreign port. If the vessel does

not officially enter or clear a foreign port and has no contact with the shore except for purposes of receiving orders or the taking on of bunker oil or necessary sea stores or was in distress or, because of any other emergency, does not remain longer than 24 hours, it is not considered to have called at the port in question. The following countries and possessions are not considered to be foreign but are considered to be domestic ports for terms of quarantine:

Canada
Alaska
Territory of Hawaii
Bermuda
Puerto Rico
Virgin Islands
Newfoundland
West Coast of Lower California
Bahama Islands
Cuba
Canal Zone
San Pierre
Miquelon

(B) From any domestic port declared to be infected with quarantinable disease. At present these are:

Tacoma, Washington Hilo, T. H. Kahului, T. H.

(C) If a person aboard has or is suspected of having a quarantinable disease (cholera, plague, exanthematous typhus, smallpox, yellow fever, or leprosy in an alien).

(D) For the purpose of rat inspection if the vessel has been in a suspected plague port within 60 days. At present these ports are:

(a) (a) All South American ports.
(b) All ports in Africa and the adjacent islands of Azores, Maderia, Canary, Cape Verde, and Madagascar.
(c) All Asiatic ports and ports of Hainan and Ceylon and other adjacent islands.
(d) All ports of Dutch East Indies.
(e) All ports on the Islands of Hawaii and Maui.
(f) The European-Mediterranean ports of Spain, France, Greece, Malta and Istanbul.
(g) Noumea, New Caledonia.
(h) Tacoma, Washington.

2. Those with a medical officer (physician) aboard or in the convoy or squadron.

(A) From any port, foreign or domestic, where quarantinable disease exists and communication has been of a type liable to convey infection. Communication has <u>not</u> been "of a type liable to convey infection" in the following instances:

Cholera: Provided that Army, Navy or ships' personnel have been inoculated against cholera or such personnel have not been allowed liberty in ports where cholera is known or suspected to exist; provided further, that no water supplies or only water supplies known to be cholera-free have been taken in such ports, and provided further that fresh food stores such as vegetables and fruits to be eaten raw have not been taken in such ports.

Yellow Fever: Provided that Army, Navy or ships' personnel of vessels calling at ports known or suspected of being infected with yellow fever have been inoculated against yellow fever; and provided that the vessel has remained at anchor not less than 200 meters from the nearest shore; and further provided that all necessary precautions have been taken to prevent the breeding of Aedes aegypti mosquitoes aboard the vessel.

Typhus: Provided that Army, Navy or ships' personnel of vessels calling at ports infected with exanthematous typhus present in epidemic form have been inoculated against typhus; and further provided, that such personnel are known to be louse-free.

Smallpox: Provided that Army, Navy or ships' personnel of vessels calling at a port suspected of having smallpox present in epidemic form have not been allowed liberty or have had smallpox or have been successfully vaccinated against smallpox within the past three years.

Plague: Provided that the vessel has remained at anchor during its stay in a port known or suspected of being plague-infected or has enforced and maintained adequate measures to prevent rat infestation, has not taken aboard rat-attractive or rat-harboring cargo or stores and is in fact rat-free.

(B) If a person aboard has or is suspected of having a quarantinable disease (cholera, plague, exanthematous typhus, smallpox, yellow fever, or leprosy in an alien).

(C) For the purpose of rat inspection if requested by the medical officer.

3. All other naval vessels with or without a medical officer (physician) aboard will neither fly a "Q" flag nor request pratique. Those vessels having a medical officer aboard and from a foreign port and under conditions other than indicated in paragraph 2 will forward all duplicate Bills of Health and a modified quarantine declaration certificate (Navy Department General Order 157) to the "Quarantine Officer, U. S. Public Health Service" of the local port of entry or the nearest port in which a U. S. Public Health Officer is located within 24 hours after arrival; where arrangements have been made, the report may be forwarded via the District Medical Officer. (Capt. T. B. Magath, MC(S), USNR - Navy Quarantine Liaison Officer)

Infections Due to Staphylococci Resistant to Sulfonamides and Penicillin: "Sulfonamide-resistant strains of coagulase-positive staphylococci are being recovered with increasing frequency from patients. This resistance appears, as far as has been observed, to be a permanently acquired characteristic and the development of resistance is not associated with diminution in virulence.

"Coagulase-positive strains of staphylococci are occasionally encountered which possess a natural resistance to penicillin. While this biological phenomenon may be conducive to therapeutic failures with penicillin, the resistance is relative, and may be overcome with adequate doses of penicillin. For this reason, it is recommended that adults having severe staphylococcal infections should receive a minimum of 200,000 units of penicillin per 24 hours during the initial stages of therapy.

"Coagulase-positive strains of staphylococci may acquire resistance to penicillin in vivo and in vitro. Fortunately, the development of such resistance appears to be a minor cause of failure with penicillin. The resistance to penicillin which has been developed by in vitro methods may not be a permanent property of the organisms, and strains with increased resistance are more susceptible to the killing action of human whole blood in vitro. Further investigations are necessary to determine if resistance acquired as a result of therapy becomes a permanent characteristic of the organisms.

"Strains of coagulase-positive staphylococci may show a natural resistance to penicillin, but marked sensitivity to sulfathiazole or sulfadiazine. In view of this, a combination of penicillin and sulfonamide therapy might be indicated in the treatment of selected patients." (Spink, Hall and Ferris, Univ. of Minnesota; CMR Bulletin #24. - To be published.)

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Bacteriolytic Action of Penicillin: The action of penicillin on bacteria has been attributed mostly to its bacteriostatic activity.

In a recently published paper, Todd calls attention to early observations by Fleming that bacteriolysis is exhibited by certain bacteria in the presence of penicillin, and he has conducted experiments, using several organisms, to observe the effect of penicillin on them in culture.

All of the penicillin-sensitive organisms tested showed bacteriolysis in the presence of penicillin. All penicillin-resistant organisms tested failed to show lysis. Bacteriolysis appeared to be dependent on the phase of growth of the organisms and its rate depended on the rate of multiplication. Old cultures in a resting state not only failed to show bacteriolysis but also in certain instances resisted the bacteriostatic and bactericidal activity of penicillin.

It would appear that bacteriostasis, bactericidal action and bacteriolysis may be different stages of a single process proceeding in that order. The fact that the most rapid and complete lysis occurs with organisms at the maximal rate of multiplication suggests a possible explanation of the great effectiveness of penicillin in treatment of the invasive stage of acute infections. (Lancet, Jan. 20, '45)

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Professional Qualifications Card: Professional Qualifications Cards were mailed to all medical officers with the Bumed News Letter of November 24, 1944. In a letter which accompanied the form, medical officers were directed to fill out the information requested thereon and return the card as promptly as possible to the Bureau. It is urgently requested that medical officers who have not filled out their Professional Qualifications Cards do so as soon as possible.

The information contained on this card is of direct importance to each medical officer as it is used in determining his fitness for various types of duty. If any medical officer failed to receive a Professional Qualifications Card, he may obtain one on application to the Bureau of Medicine and Surgery. (Prof. Div., BuMed - G. C. Thomas)

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"Malaria and Epidemic Disease Control Training Manual No. 6 - Filariasis - Epidemiology and Control" (Restricted) compiled by Lt. Byrd and Lt. (jg) St. Amant - for Medical and Epidemic Disease Control Officer, SoPac area - November 1944, is available in limited quantities. Interested personnel may obtain this manual on request from Malaria and Epidemic Disease Control Officer, SoPac Headquarters, Navy 131.

The Bureau of Medicine and Surgery has no copies for distribution at this time. (Prev. Med. Div., BuMed - H. P. Hopkins)

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Immune Serum Globulin: The globulin prepared for the Navy as part of its Plasma Fractionation Program and used in the prevention and treatment of measles bears the official National Institute of Health name, Immune Serum Globulin (Human).

In the Medical Supply Catalog and on several lots received from one manufacturer the term, Measles Immune Serum Globulin (Human) is used. Attention is called to the fact that these two names refer to the same product. (Nav. Hosp., Bethesda, Md. - S. T. Gibson)

Submission of Annual Sanitary Reports Via Official Channels: Annual sanitary reports from several Naval and Marine Corps activities have been forwarded to BuMed without having been routed through official channels for proper endorsement. Attention of originating activities is invited to Par. 2691, Manual of the Medical Department, relative to submission of annual sanitary reports. (Prev. Med. Div., BuMed - T. J. Carter)

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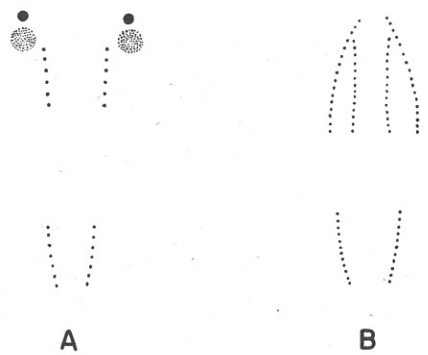
Bite Patterns of Snakes: In most recent articles on snake bite it has been stated that a pit viper (rattlesnake, copperhead or water moccasin) in biting makes only one or two large punctures, in contrast to a harmless snake which makes several rows of small punctures. The reason for this was said to lie in a difference of the behavior of the two types of snake, i.e., the pit viper merely stabs with its pair of long fangs, whereas the harmless snake actually bites.

By allowing representative species of the two types of snake to bite plastic cylinders or gelatin models of hands wrapped in thin paper, Pope and Perkins have shown that the pit vipers of the United States bite rather than stab and leave impressions of their teeth as well as their fangs. Since all the teeth in any one of the harmless snakes in the United States which is big enough to bite are usually similar in size, structure and shape, most of them come into play during the act of biting and, in a perfect bite, leave six rows of punctures, four rows in one group and two in the other (Fig. A). In the pit vipers, the outer row on each side of the upper jaw has been reduced to a single large, erectile, hollow tooth - the fang. The bite of a pit viper, therefore, should leave not more than four rows of punctures in addition to the two large perforations made by the fangs (Fig. B).



Diagrams of almost perfect bite patterns of a poisonous and a harmless snake. The stippled areas indicate the approximate positions of the pockets of injected venom. Fig. A - western diamond-back rattlesnake. Fig. B - bull snake. (Arch. Surg., Nov. '44)

To: All Ships and Stations. Op13-1D-jc
Serial 60613
Subj: Medical Department Facilities at the Naval Training Center, Great Lakes, Illinois. 12 27 14
5 Jan 1945

1. The Naval Dispensary at the Naval Training Center, Great Lakes, Illinois (Camp McIntire), and the entire facilities of Camp Lawrence at the Naval Training Center, Great Lakes, Illinois, are hereby transferred to the administrative command of the U. S. Naval Hospital, Naval Training Center, Great Lakes, Illinois, for use for naval hospital purposes and as a receiving and distribution center for patients.

2. Bureaus and offices concerned take necessary action.

--SecNav. James Forrestal.

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ALNAV 3

Subj: Handling of Beer and Ale. BuPers. 1 Jan 1945

Alnav 208 is modified as follows: "The provisions of Alnav 208 shall not apply in naval hospitals or on naval hospital reservations."

--SecNav. James Forrestal.

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To: All Ships and Stations. BUMED-ECB-MLM
A3-3/EN10
Subj: Hospital Ticket - Women, NAVMED 416. 20 Dec 1944

Encl: (A) Copy of NAVMED 416.

1. Subject form is now available at the Naval Medical Supply Depot, Brooklyn, New York, and Naval Medical Supply Depot, Oakland, Calif. Sample of this form is enclosed.

2. Hospital Ticket - Women, NAVMED 416, is similar to the Hospital Ticket - Men, NAVMED Form G, but lists the personal effects for women.

3. Supply of these forms may be ordered on Medical Supply Depot Requisition NAVMED 4. Catalogue listing will be as follows:

S16-222 NAVMED 416 Hospital Ticket - Women 50 in pad.

--BuMed. Ross T. McIntire.

* * * * * *

HOSPITAL TICKET—WOMEN

NAVMED—416 (9-44)

DATE _____

FROM:

TO:

The following named patient with her Health Record, necessary transfer papers (Bupers Manual), and effects, inventoried under my supervision and certified to be correctly listed below, is hereby transferred to your charge.

NAME	RANK, GRADE OR RATE

DIAGNOSIS (*from Nomenclature*)

EFFECTS OF PATIENT TRANSFERRED

ITEM	QUANTITY	ITEM	QUANTITY	ITEM	QUANTITY
BATHING SUIT		HATS		SEWING KITS	
BATHROBE		HAT COVERS, BLUE		SHIRTS, CHAMBRAY	
BLACKING		HAT COVERS, GRAY		SHIRTS, NAVY BLUE	
BRASSIERES		HAT COVERS, WHITE		SHIRTS, RESERVE BLUE	
BRUSHES, HAIR		HAT DEVICES		SHIRTS, WHITE	
BRUSHES, TOOTH		HAVELOCK		SHOES, BLACK	
BRUSHES, CLOTHES		HOSE		SHOES, SPORT	
BRUSHES, SHOE		HOUSECOAT		SHOES, WHITE	
BOOKS		IRON, ELECTRIC, WITH CORD		SHOE POLISH, WHITE	
CAPS, GARRISON		LAUNDRY BAGS		SLACKS, DUNGAREE	
CLOTHES HANGERS		MUFFLERS		SLACKS, NAVY	
CLOTHESPINS		NIGHTGOWNS		SLIPS	
COLLAR DEVICES		OVERSHOES OR RUBBERS		SLIPPERS	
COMBS		OVERCOATS		SMOCKS	
COSMETIC CASE		PAJAMAS		SOCKS	
COVERALLS		PANTIES		STATIONERY, BOXES	
DITTY BAG		PENS AND PENCILS		STENCILS	
GARTER BELTS		RAINCOAT-OVERCOAT		SUITCASES	
GIRDLES		RAINCOAT LINING		SWEATERS	
GLOVES, BLACK		SANITARY BELTS		SWEATSHIRTS	
GLOVES, WHITE		SERVICE JACKET, BLUE		TIES	
GYM SUITS		SERVICE JACKET, GRAY		TOWELS	
HANDBAG, BLACK WITH STRAP		SERVICE JACKET, WHITE		TURBANS	
HANDBAG, WHITE, OR COVER		SERVICE SKIRTS, BLUE		WASHCLOTHS	
HANDKERCHIEFS		SERVICE SKIRTS, WHITE		WORKING UNIFORMS, GRAY	

ADDITIONAL ARTICLES

ITEM	QUANTITY	ITEM	QUANTITY

INVENTORIED BY _____

_____
(MC) U. S. N.

APPROVED _____
U. S. N., Commanding.

I Certify that my personal effects as listed above have been returned to me.

WITNESS _____
(Signature)

_____
(Signature of patient)

ALNAV 5

Subj: Identification of Bodies. BuMed. 6 Jan 1945

To facilitate and expedite identification of unknown bodies it is directed that rolled impressions of all 10 fingers if possible or of all available fingers be submitted to BuMed on Form BNP680, NAVMC 330-PD, or on blank sheet with each digit properly marked. Submission of one fingerprint as required on NavMed Form N not sufficient in most cases for practical search.

--SecNav. James Forrestal.

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CIRCULAR LETTER NO. 14-45.

To: All Ships and Stations. Pers-66-IG
P16-3/MM

Subj: Enlisted Personnel of the Active List Disabled for General Service, Disposition in the Case of. 15 Jan 1945

Refs: (a) BuPers-BuMed joint ltr, relative to enlisted personnel of the active list disabled for general service; N.D. Bul. of 30 Nov 1944, 44-1345.
(b) BuMed-BuPers joint ltr of 28 Oct 1942; N.D. Bul. Cum. Ed. 1943, 42-923, p. 1162.

1. Reference (a) is hereby canceled.

2. By such cancelation, reference (b) remains in effect and the procedures outlined therein will be followed. --BuPers. L. E. Denfeld.

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CIRCULAR LETTER NO. 5-45.

To: All Ships and Stations. Pers-2111-FBH
OM

Subj: Qualification for Submarine Medical Officer and Authorization to Wear the Submarine Medical Insignia. 6 Jan 1945

Ref: (a) BuPers Manual, art. E-1314, as revised by Man. Circ. Ltr 44-44; N.D. Bul. of 31 Jul 1944, 44-883.

1. It has come to the attention of this Bureau that many articles or reports and examination papers submitted by medical officers as a part of the requirements for designation as "Submarine Medical Officer" are below the standards

required. Articles submitted by applicants for designation as "Submarine Medical Officer" in accordance with the requirements of reference (a) to the Central Board of Medical Officers clearly reflect, in many instances, that little time or effort has been devoted to their preparation. Articles or reports are desired which yield original and important information on the subject of submarine and diving medicine and are to be written with due effort and thought. The subject matter which they cover should be of such nature as to furnish a significant contribution to this specialized field of medicine.

2. The unauthorized wearing of the submarine medical insignia has come to the attention of this Bureau. Medical officers are advised that the wearing of the submarine medical insignia must be authorized by letter from the Chief of Naval Personnel and that such officers must meet the qualifications as outlined in reference (a).

3. For information as of the date of this letter, this Bureau has authorized the following-named medical officers to wear the submarine medical insignia:

ADAMS, Benjamin H., Capt. (MC), USN
BATEMAN, James G., Lieut. (MC), USN
BEHNKE, Albert R., Comdr. (MC), USN
BRINTON, Edward S., Lieut. (MC), USN
BROWN, Ernest W., Capt. (MC), USN
BURMAN, Richard G., Lieut. MC-V(G), USNR
CHRISMAN, Allan S., Comdr. (MC), USN
COLE, Gillon M., Lieut. (MC), USN
DUBOIS, Eugene F., Capt. (MC), USNR
DUFF, Ivan F., Lieut. MC-V(G), USNR
ECKBLAD, Gordon H., Comdr. (MC), USN
FRANCIS, William S., Lt. Comdr. (MC), USN
HAYTER, Robert, Lieut. (MC), USN
HOLLER, Moffitt K., Lieut. (MC), USN
KELLAR, Robert J., Lieut. (MC), USN
SHILLING, Charles W., Capt. (MC), USN
STAINBACK, William C., Lieut. (MC), USN
STORCH, Raymond B., Capt. (MC), USN
VAN DER AUE, Otto E., Comdr. (MC), USN
WELHAM, Walter, Lt. Comdr. (MC), USN
WILLMON, Thomas L., Comdr. (MC), USN
YARBROUGH, Oscar D., Comdr. (MC), USN
YOUNG, Mark I. H., Lt. Comdr. (MC), USN

--BuPers. L. E. Denfeld.

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To: All Ships and Stations. S35(647-804)
EN28/A2-11

Subj: Laundry - Use of Salt Water in Washing Machines on Naval Vessels. 5 Jan 1945

Refs: (a) BuShips ltr JH1(336), EN28/A2-11, of 28 Jul 1944; N.D. Bul. of 31 Jul 1944, 44-886.
(b) BuShips Spec. 51S47(INT), of 1 Apr 1944, "Soap, Salt-Water, Powdered (for Use in Soft, Hard or Sea Water)".

1. Reference (a) discussed the use of salt-water powdered soap in laundries on naval vessels.

2. In order to use salt water safely and satisfactorily in washing machines on naval vessels, the following precautions must be observed:

(a) Salt water must not be used when the vessel is in polluted waters and therefore should be used only when the vessel is outside the 50-fathom curve, or 25 miles from shore.

(b) The fresh-water inlet to the washing machine must be above the overflow level in the washing machine (door opening). This is necessary in order to insure that salt water will not be siphoned back into the fresh-water system through a leaky or open valve if pressure is lost in the fresh-water system.

(c) There must be no interconnection between the piping of the fresh-water system and the salt-water system.

(d) A vacuum breaker must be connected to the steam line through which steam is injected into the bottom of the washing machine for heating the water. This vacuum breaker should be connected to the steam line back of the first shut-off valve at an elevation above the overflow level of the washing machine.

3. If it is desired to provide salt-water connections to the washing machine the work should be accomplished in the various types of installations as follows: (no shipalts will be issued)

(a) Size 20" x 20" washing machines (used on small vessels) - Provide a salt-water faucet in order that salt water may be introduced into the machine by means of a bucket.

(b) Washing machines with present fresh-water inlet connections below the overflow level (door) - Make a new fresh-water inlet connection above the overflow level, and use present water inlet connections for salt water.

(c) Machines with two fresh-water inlet connections - If these inlet connections are above the overflow level, one of these may be used for the fresh-water connection and one may be used for salt-water connection by removing the interconnecting piping. If they are not above the overflow level, new fresh-water inlet connection must be made and the presently installed inlet connections used for salt water.

(d) Machines with one fresh-water connection above the overflow level- Add a new salt-water inlet connection.

(e) The new inlet connections may be made on the ends of the machine except on a double end drive. As a general rule double end drive machines have two water inlet connections at present. The new connection must be of such construction that it will not interfere with the rotation of the cylinder. Since it is above the overflow level, it need not be entirely watertight.

(f) The salt-water line should be approximately the same size as the fresh-water line and fitted with suitable valve.

(g) A vacuum breaker should be connected to the steam line as discussed in paragraph 2(d) herein.

4. Heaters for salt water will not be provided at present. The salt water in the washing machine can be heated by injecting steam into the bottom of the washing machine, as presently provided for.

5. An approved salt-water soap is currently procured under reference (b) and is carried in Standard Stock at various naval supply depots under Stock No. 51-S-1790. --BuShips. W. F. Christmas.

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To: All Ships and Stations. BUMED-RP-IMB
P16-3/P3-2
PERS-651-ap
P16-3/MM
9 Jan 1945

Subj: Information and Instructions Relative to Transfer of Enlisted Personnel to Naval Hospitals or Hospital Ships for Treatment, or to Receiving Ships or Receiving Stations Upon Completion of Hospitalization, Concerning Disciplinary Action Taken or Pending.

1. A great number of reports of medical survey received in the Bureau of Naval Personnel contain incomplete entries relative to the disciplinary status of the personnel concerned and do not give sufficient information to show definitely if disciplinary action has been initiated, completed, or partially completed for the offenses noted. Such incomplete information causes much unnecessary correspondence by the Bureau of Medicine and Surgery and the Bureau of Naval Personnel.

2. To eliminate this condition it is directed that hereafter when enlisted personnel are transferred to a naval hospital or hospital ship, complete information regarding their disciplinary status shall be furnished the hospital or hospital ship. This shall be in the form of a special report signed by the commanding officer. It shall be forwarded in duplicate together with the Hospital Ticket (NavMed-G or 416) and securely attached thereto. It should include

information as to any action pending, the date and nature of the offense, whether trial has been held, and if so, the sentence imposed, any mitigating action, and the date of approval together with the portion of sentence served, if any. If no disciplinary action is pending, a signed statement to that effect shall be made.

3. When enlisted personnel are received in a naval hospital or on board a hospital ship, their papers will be checked immediately to assure that there is attached thereto a statement showing the disciplinary status of such personnel. One copy of this statement should be made available to the attending medical officer for attachment to the clinical record of the individual concerned and thus made readily available in the event the individual is brought before a board of medical survey. In the event such a statement is not received with the patient, it shall be requested immediately from the activity effecting the transfer.

4. When a report of medical survey is submitted to the Bureau of Medicine and Surgery, great care shall be exercised to assure that full information regarding the person's disciplinary status is shown therein.

5. If an enlisted person who is awaiting disciplinary action is transferred, on completion of hospitalization, to the nearest receiving ship or receiving station or other naval activity to await instructions as to further disposition, such enlisted person shall have such disciplinary action held in abeyance pending action by the Bureau of Naval Personnel and the Bureau of Medicine and Surgery on the recommendation of the Board of Medical Survey.
--BuPers. L. E. Denfeld. --BuMed. Ross T. McIntire.

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ALNAV 33

Subj: Dating Period of Human Serum Albumin, Extension of. BuMed. 8 Feb 1945

The National Institute of Health allows a five year dating period for normal human serum albumin S1-1945. All serum albumin now in stock which has expiration ending any time in the years 1945 1946 or 1947 should be extended two years.

The dating period may eventually extend beyond five years, therefore human serum albumin should not be discarded without first obtaining instructions from Bureau of Medicine and Surgery. --SecNav. James Forrestal.

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ALNAV 12 (45-66)

Subj: Marriages, Nurse Corps. BuMed. 19 Jan 1945

Provisions paragraph 451 E, Manual Medical Department, suspended for duration war. Effective 10 January 1945 resignations of members of Navy Nurse Corps or Naval Reserve Nurse Corps will not be accepted and discharge accomplished solely because of marriage. --SecNav. James Forrestal.

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To: All Ships and Stations. BUMED-C-LET
P7/OG
Subj: Navy Nurse Corps, Marriage of Officers of. 23 Jan 1945

Ref: (a) Alnav 12-45; 45-66, above.

1. By suspension of the provisions of par. 451(e), Manual of the Medical Department, reference provides for continuing in the Nurse Corps officers thereof who marry. The following instructions are issued pursuant to this change in policy:

(a) An officer of the Navy Nurse Corps or Naval Reserve Nurse Corps whose surname is changed by reason of marriage or divorce shall submit in duplicate to the Bureau of Medicine and Surgery via official channels a request that her name be changed on the official Navy records. The request shall state full name prior to the marriage reported (as Mary Jane Doe) and the full married name (as Mary Jane Rowe), and shall be signed by the name as given in her appointment to the Nurse Corps. The full name of the husband shall be stated and, if in the military service, his rank or rate and branch of service shall be given. In cases of change of name by divorce, present and former names shall be similarly stated and the request similarly signed. The endorsement of the request by the commanding officer should show that the records under his cognizance have been changed to accord with the change in marital status.

(b) After request for change of name by reason of marriage or divorce has been submitted to the Bureau as provided for above, the officer thenceforth will be known and recorded in all official communications by the name so reported. Receipt of the request will not be acknowledged nor will action be taken by the Bureau other than to effect the necessary changes in records.

(c) There shall be forwarded with the letter request for change of name a properly executed beneficiary slip and a copy of the marriage certificate or divorce decree certified to under seal by the clerk of records of the place where such certificate or decree was issued.

2. When it shall be determined that an officer of the Nurse Corps is or has been pregnant in the naval service, the following procedure shall be adopted to effect separation from the service:

(a) The officer concerned shall be requested to address a letter of resignation to the Surgeon General via official channels. This resignation may reference this letter as the reason for its tender.

(b) There shall be enclosed with this letter of resignation the certificate of a naval medical officer as to the existence of pregnancy. The certificate of a civilian physician will not be accepted.

(c) These papers shall be forwarded with utmost dispatch to the Surgeon General via official channels.

(d) If an officer who is or has been pregnant while in the naval service refuses to submit her resignation, a detailed report of the case, including the certificate of a naval medical officer, shall be forwarded to the Surgeon General via official channels as soon as practicable.

(e) Action will normally be taken in such cases by letter.

(f) Officer of the Nurse Corps separated from the service under the provisions of this letter shall not be eligible for reappointment.

3. Existing regulations and directives governing the administration of the Nurse Corps shall continue to apply equally to all officers of the Corps. Therefore, commutation of quarters is not authorized for married officers of the Nurse Corps except where public quarters are not available. Married nurses will have the same status relative to assignment and commutation of quarters as single nurses.

4. It is desired that all officers of the Nurse Corps be informed of the contents of this letter in order that they may be fully aware of their responsibilities, the type of separation involved, and the provisions for their welfare.

--BuMed. W. J. C. Agnew.

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To: All Ships and Stations. BUMED-ECB A3-3/EN10(064)

Subj: Modification of Usage in Identifying Medical Department Forms and Publications. 27 Jan 1945

Ref: (a) Ltr BuMed-ECB-FAS-A3-3/EN10(064), of 14 Dec 1944; N. D. Bul. of 15 Jan 1945, 45-23.

1. Enclosure (B) of reference (a) listed Medical Department forms and publications (exclusive of those used for internal administrative purposes in BuMed).

2. Amend said enclosure such that titles of forms and publications indented herewith read as follows:

NAVMED H-8	Health Record (Medical History)
NAVMED U	Report of Medical, Dental and Hospital Treatment, etc.
NAVMED HF-20	Liberty List
NAVMED 205	Biographical Inventory-Key X
NAVMED 206	Biographical Inventory-Key Y
NAVMED 207	Biographical Inventory-Key Z
NAVMED 217	Medical Questionnaire for Applicants for the Nurse Corps of the U. S. Navy and U. S. Naval Reserve
NAVMED 357	Handbook of the Hospital Corps, Addendum
NAVMED 382	Lightning Can Strike You Twice

--BuMed. W. J. C. Agnew.

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To: All Ships and Stations. BUMED-Y-DFS
P3-3/P3-1(054-40)

Subj: Roentgenographic Examinations of the Chests of Navy and Marine Corps Personnel. 4 Jan 1945

Ref: (a) BuMed ltr P3-3/P3-1(054-40), of 13 Jun 1944; AS&SL Jan-Jun 1944, 44-741, p. 423.

1. Ref. (a) is canceled herewith.

2. Initial chest examination - Roentgenographic examination of the chest shall be made as a part of the physical examination to determine physical fitness for original entry into the service and for active duty, also of candidates for entrance to the Naval Academy and of candidates for officer training, either as a part of the examination to determine their fitness for training or upon reporting to the school. Recruits who have received roentgenographic examination of the chest during enlistment or induction with negative findings do not require another upon arrival at a naval training station or Marine recruit depot.

3. Periodic examinations - Roentgenographic examination of the chest of all naval and Marine Corps personnel on active duty who have not been so examined during the previous 12 months shall be made at the earliest opportunity.

Thereafter, chest examinations of personnel on active duty under the age of 30 shall, if practicable, be made at least once annually. Personnel of any age who have X-ray findings of possible future significance shall receive this examination every 6 months, where possible, using 14x17-inch film.

4. Final chest examination - Roentgenographic examination of the chest of all naval and Marine Corps personnel shall be made and the interpretation entered in the health record during the physical examination at the time of release from active duty or discharge from the service unless such an examination has been made and the interpretation recorded in the health record during the previous 6 months.

5. Equipment - All naval and Marine Corps activities with the necessary X-ray equipment shall be considered as available for these examinations, and whenever practicable the examinations shall be made by the photofluorographic technique for conservation of film. Stationary photofluorographic units are located in the navy yards and at other shore stations where the need for such examinations is sufficiently great. The equipment and personnel of each photofluorographic unit will be adequate to examine 125 to 150 persons an hour.

6. Reexamination - Individuals in whom the photofluorographic film discloses abnormal conditions shall be reexamined by means of a 14x17-inch film prior to final action in their cases. Transfer to a naval hospital solely for this reexamination is not necessary if means for obtaining it is otherwise available. When individuals are not available for reexamination, their commanding officers shall be notified by letter and a copy of this letter forwarded to the Bureau of Medicine and Surgery, preferably with the films and reports. The reexaminations shall be made at the first opportunity and individual reports forwarded to the Bureau of Medicine and Surgery in accordance with paragraph 12(a) (3).

7. Causes for rejection - Causes for rejection for original entry into the service shall be as follows:

(a) Any evidence of reinfection (adult) type tuberculosis, active or inactive, other than slight thickening of the apical pleura or thin solitary fibroid strands.

(b) Evidence of active primary (childhood) type tuberculosis.

(c) Extensive multiple calcification in the lung parenchyma, or massive calcification in the hilus, or any calcification of questionable stability.

(d) Evidence of fibrous or serofibrinous pleuritis, except moderate diaphragmatic adhesions with or without blunting or obliteration of the costophrenic sinus.

(e) Other disqualifying defects demonstrable by a roentgen examination of the chest. (See paragraph 1477, Manual of the Medical Department.)

NOTE: When recording interpretations, the word "negative" should be used only when the lung fields are without abnormality; defects considered not disqualifying should be fully described and noted as not considered disqualifying.

8. Disposition of recruits - All recruits found to have tuberculosis or other disqualifying defect during the physical examination made at a training station (or other station) to determine fitness for active duty shall be invalided from the service. The condition will be considered as existing prior to enlistment and not in the line of duty. These cases will be discharged after approval of the recommendation of a board of medical survey by the proper authority, without prior approval by the Bureau of Medicine and Surgery and the Bureau of Naval Personnel, or in the case of the Marines, the Commandant, U. S. Marine Corps. Report of medical survey stating the action taken and date shall be forwarded in quadruplicate to the Bureau of Medicine and Surgery.

9. Disposition of personnel at periodic examination - Causes for further clinical study, treatment and disposition of personnel in the service other than recruits shall be those stated in paragraph 7. The extent of the clinical study required shall be determined in the individual instance by the medical officer who has cognizance of the case. Each case shall be disposed of on its own merits and with a view to the effects of hardships incident to active service on the lesions under consideration.

10. Disposition of personnel at time of release from active duty or separation from the service - Individuals with X-ray evidence of chest pathology in which there is reason to believe that active disease may be present shall be hospitalized for further study with a view to definite establishment of their physical status prior to release from active duty or discharge.

11. Recording results - The results of roentgenographic examinations of the chest shall be recorded and forwarded as follows:

(a) Laboratory log - An accurate log of photofluorographic examinations of the chest shall be kept by the station at which the examinations are made. This record shall contain the name in full, service number, date and place of birth, date the examination was made, the number of the film, the interpretation and the name of the roentgenologist. This log shall be initialed daily by the medical officer in charge of the unit who shall be responsible for the accuracy of the entries. The data on log can be used to record examinations on NavMed Form H-8 (Medical History Sheet) of the Health Record.

In the case of mobile photofluorographic units, the log for each station shall be left with the station where the examinations were made.

In the case of stationary photofluorographic units, the log used for the

examination of the personnel of another ship or station shall be retained where the examinations were made.

(b) Identification of film - Upon each film must appear the following data:

(1) Station symbol of the station on which the examination is made, as listed in the Navy Filing Manual.
(2) The film number.
(3) The date.

(1) (2) (3)
Example "NY1-99,999 3-5-45."

In addition to the above, mobile photofluorographic units shall enter the symbol of the unit.

In order that films filed in rolls may be quickly found upon request, it is essential that all photofluorographic film be numbered in consecutive numerical order. This will necessitate a change in the numbering system used in a small minority of the stations. Numbering should progress from 1 to 99,999, and then repeat.

When 14x17-inch films are made, the same data shall be entered, and whenever possible, the same film number should be used which appears on the corresponding photofluorogram.

(c) Health record - The place, date, film number and report of the interpretation shall be entered on NavMed Form 8 (Medical History Sheet) of the Health Record. The station and film number mentioned above must be entered without fail, for without this information the film cannot be located in the files.

12. Films shall be forwarded to the Bureau of Medicine and Surgery as follows:

(a) At naval activities other than naval recruiting stations and armed forces induction centers.

(1) All 35 mm. photofluorographic film shall be joined together in a continuous roll for each period of time covered. In this connection, splicing should be done with a view to permitting ready passage of the finished roll through the viewer. Splicing is easily done by scraping the emulsion from a narrow strip at the ends of the strips of film and using acetone as the adhesive. Films which show positive findings, or which are considered to be technically unsatisfactory, shall be left in the roll. Technically unsatisfactory films shall be defaced by crossed lines made with a colored wax pencil or other means. The roll shall be forwarded to the Bureau for review, together with individual reports of all 14x17-inch X-ray examinations made for persons whose photofluorograms are in the roll. In addition there shall be submitted a Report of Photofluorographic Chest Survey as prescribed by paragraph 13 below.

The roll of films, the reports of 14x17-inch films, and the Report of Photofluorographic Chest Survey shall be forwarded to the Bureau of Medicine and Surgery in one package addressed "Attention of Tuberculosis Control Section." Shipment may be made weekly or semi-monthly. When films made for the personnel of more than one activity are joined in the same roll, separate Reports of Photofluorographic Chest Survey should be forwarded for each activity concerned.

(2) 4x5-inch photoroentgenograms, identified in accordance with paragraph 11(b), shall be forwarded to the Bureau for review. They need not be joined into a roll, but shall be placed in consecutive numerical order. They should be forwarded at the intervals, and accompanied by the required reports, listed above. Upon completion of the review the films will be returned to the station for filing. They shall be filed for a minimum period of 4 years, available upon request.

(3) 14x17-inch roentgenographic films, identified in accordance with paragraph 11(b), shall not be forwarded to the Bureau but shall be filed at the station where the examinations were made for a period of not less than 4 years. An individual report for each person so examined shall be forwarded for file and shall contain the date and place of examination, the name of the examinee in full, the service number, the date and place of birth, the interpretation, the signature of the roentgenologist, disposition of the case, and the station symbol and number of the corresponding photofluorogram when one has been made.

(b) Examinations made under contract - When roentgenological examinations of the chest are made under contract, such film shall be interpreted by a naval medical officer and the disposition of films and reports shall be in accordance with the foregoing. In this connection such film should be not forwarded to the Bureau of Medicine and Surgery until the interpretations have been recorded and the reports prepared.

(c) At naval recruiting stations and armed forces induction centers - Roentgenographic films of the chest of individuals examined at naval recruiting stations and armed forces induction centers shall be securely stapled to the copy of NavMed Form H-2 (Physical Examination) and forwarded to the Bureau of Medicine and Surgery for file.

13. Report of Photofluorographic Chest Survey (NavMed 618) - This report shall be forwarded to the Bureau of Medicine and Surgery with each roll or package of film described in paragraph 12(a) and (b) above. The following form shall be used and prepared locally until such time as it is listed in the Naval Medical Supply Catalog:

NavMed-618 MEDICAL DEPARTMENT, U. S. NAVY
PHOTOFLUOROGRAPHIC CHEST SURVEY
Photofluorogram # . . . . . to . . . . . Date . . . . . .

A. STATION (SHIP) . . . . . .
Station complement . . . . . .
Number requiring photofluorogram. . . . . .
Number examined by photofluorogram. . . . . .
Number reexamined because of technically unsat. film. . . . . .
Number reexamined by 14x17 roentgenogram . . . . . .
Number disqualified or referred for further clinical study . . . . . .
Tuberculosis . . . . . .
Other (itemize). . . . . .

(NOTE): Include section B when the survey includes the enrollment of a school
B. NAME OF SCHOOL . . . . . .
School enrollment . . . . . .
Number requiring photofluorogram. . . . . .
Number examined by photofluorogram. . . . . .
Number reexamined because of technically unsat. film. . . . . .
Number reexamined by 14x17 roentgenogram . . . . . .
Number disqualified or referred for further clinical study . . . . . .
Tuberculosis . . . . . .
Other (itemize). . . . . .

. . . . . .
(MC), USN

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14. Requests for films - When a request is made of the Bureau to forward a photofluorogram, such request shall include the name in full, file or serial number, date and place of birth, station at which the examination was made, film number, and date of the examination. --BuMed. Ross T. McIntire.

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To: All Ships and Stations.

BUMED-MH6-SEH:mf
P11-1/MM(111-41)

Subj: Recommendations and Orders for Enlisted Personnel to Training Courses Listed in Catalog of Hospital Corps Schools and Courses, Revised 1944 - Policy with Respect to.

20 Jan 1945

Refs: (a) App. D, Manual of the Medical Department, Bureau Circ. Ltr M.
(b) BuMed Form Ltr No. 13, of 7 Nov 1941.
(c) BuMed Ltr H-RLS/P11-1/MM(111), of 20 Jun 1942.
(d) Catalog of Hospital Corps Schools and Courses, Revised 1944.

1. Reference (b) and reference (c) and paragraph (6) of reference (a) are hereby canceled. That part of paragraph (7) of reference (a), insofar as Hospital Corpsmen are concerned, is also canceled.

2. Effective 15 February 1945, responsible medical officers shall submit to their respective commandant or administrative command on the fifteenth of each month, recommendations for Hospital Corps enlisted personnel for special instruction, combining all recommendations in one letter. The names of personnel recommended shall be listed alphabetically by rating with the title of the course for which recommended opposite each name.

3. In general, Hospital Corps enlisted personnel will not be recommended or ordered for Navy training in more than one technical specialty, except that dental technologists (general) may be also recommended or ordered to training in dental technology (prosthetic). Any technician may be recommended or ordered to training in medical field service.

4. It is directed that upon successful completion of a course in dental technology (prosthetic), the qualification "dental technologist (general)" be deleted from the records of Hospital Corps enlisted personnel concerned, and that they be listed on all subsequent required reports as dental technologists (prosthetic) only.

5. It is not the policy of this Bureau to nominate Hospital Corps enlisted personnel to BuPers from activities and units serving under the jurisdiction of the fleets for transfer to activities in the continental limits of the United States for courses of instruction in Medical Department technical specialties, except in outstanding cases or in the instances of experienced personnel for training in the submarine service, medical field service and deep-sea diving.

6. All Hospital Corps enlisted personnel will be placed under instruction in technical specialties on BuPers orders to commandants and administrative commands. Medical Department activities will receive orders from commandants and administrative commands with respect to personnel for instruction, on convening dates specified. --BuMed. Ross T. McIntire.

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To: All Ships and Stations.

BUMED-MH3-DCB
P11-1/MM
20 Jan 1945

Subj: Prerequisites to Training Courses Listed in Catalog of Hospital Corps Schools and Courses, Revised 1944, To Form Basis for Recommendations of or Orders to Enlisted Personnel.

Ref: (a) Catalog of Hospital Corps Schools and Courses, Revised 1944.

Encl: (A) Addendum to Catalog of Hospital Corps Schools and Courses, Revised 1944.

1. Effective 14 February 1945, provisions of enclosure (A) shall form the basis for recommending or ordering Hospital Corps enlisted personnel to courses of instruction listed in reference (a).

2. Every effort shall be made to locate personnel meeting "Desirable Qualifications" in whole or in part, and personnel shall not be recommended or ordered to instruction who do not meet the "Minimum Qualifications" of enclosure (A).

3. District medical officers shall promptly advise the Bureau in instances where quotas for instruction cannot be filled with personnel meeting at least "Minimum Qualifications."

4. It is directed this letter and enclosure (A) be made a part of reference (a) and referenced in all pertinent communications dealing with training of Hospital Corps Personnel. --BuMed. Ross T. McIntire.

ENCLOSURE (A)

ADDENDUM TO CATALOG OF HOSPITAL CORPS SCHOOLS AND COURSES
Revised 1944

PREREQUISITES TO COURSES
LISTED IN
CATALOG OF HOSPITAL CORPS SCHOOLS AND COURSES
Revised 1944

(Motivation and aptitude will be considered in all cases.)

Minimum qualifications (Equivalent qualifications will be acceptable)	Desirable qualifications (In addition to "Minimum Qualifications," "Desirable Qualifications" have been established on an average level. Higher qualifications are desirable in every instance.)

HOSPITAL CORPS CERTIFICATE (Ref. (a) P 6)

(a) Selection at recruit training stations.
(b) Direct enlistment as HA2c, USNR.

(c) Change of rate -

2 years high school.
Recommendation of MO.
BuMed approval when indicated in accordance with current instructions.
High-school graduate.
Special training in related fields (or striker).

THE HOSPITAL CORPS CERTIFICATE OR ITS EQUIVALENT IS ONE OF THE PREREQUISITES TO ALL OTHER COURSES

CERTIFICATE IN AVIATION MEDICINE (Ref. (a) P 7)

Men only.
2 years high school.
Typing.
High-school graduate.

CERTIFICATE IN CLERICAL PROCEDURES (Ref. (a) P 8)

High-school graduate.
Typing.
Business school or business experience.
High-school graduate.
Stenography.
Office experience.

CERTIFICATE IN CLINICAL LABORATORY TECHNIC (Ref. (a) P 9)

High-school graduate (including course in chemistry or physics or biology).
2 years high school and significant laboratory experience.
Laboratory experience.
Pre-med courses.
College graduate.
Pharmacists (graduate).

CERTIFICATE IN COMMISSARY (Ref. (a) P 11)

2 years high school
High-school graduate.
Business experience.

CERTIFICATE IN DEEP-SEA DIVING (Ref. (a) P 12)

Men only.
Physically qualified.
2 years high school.
Volunteer.
High-school graduate.

CERTIFICATE IN DENTAL TECHNOLOGY (GENERAL) (Ref. (a) P 13)

2 years high school.
Recommended by dental officer.
High-school graduate.
Dental experience.

CERTIFICATE IN DENTAL TECHNOLOGY (PROSTHETIC) (Ref. (a) P 14)

2 years high school.
Manual dexterity.
Mechanical ability.
Recommended by dental officer.
High-school graduate.
Dental (prosthetic) experience.
Dental technologist (general).

CERTIFICATE IN DERMATOLOGY & SYPHILOLOGY (Ref. (a) P 15)

High-school graduate.
Nursing experience.

CERTIFICATE IN DUPLICATION TECHNIC (Ref. (a) P 16)

2 years high school.
Print-shop experience.
High-school graduate.
Printer or related trade.

CERTIFICATE IN ELECTROCARDIOGRAPHY & BASAL METABOLISM (Ref. (a) P 17)

2 years high school.
High-school graduate.
Mechanical and electrical ability.

CERTIFICATE IN ELECTROENCEPHALOGRAPHY (Ref. (a) P 18)

High-school graduate (including course in physics).
Mechanical and electrical ability.

CERTIFICATE IN EPIDEMIOLOGY AND SANITATION (Ref. (a) P 19)

High-school graduate.
Pre-med courses.
College graduate.
High-school biology, mathematics, and chemistry.

CERTIFICATE IN FEVER THERAPY (Ref. (a) P 20)

2 years high school.
High-school graduate.
Nursing experience.
Masseur.

CERTIFICATE IN LOW-PRESSURE CHAMBER (Ref. (a) P 21)

2 years high school.
High-school graduate.
Mechanical ability.

CERTIFICATE IN MALARIOLOGY (Ref. (a) P.22)

High-school graduate.
High-school course in biology.

CERTIFICATE IN MEDICAL FIELD SERVICE (Ref. (a) P 23)

Hospital apprentice 2c.
First-aid training or experience.

CERTIFICATE IN MEDICAL PHOTOGRAPHY (Ref. (a) P 24)

High-school graduate or 2 years high-school and related experience.
Related experience (commercial or amateur).

CERTIFICATE IN NEUROPSYCHIATRY (Ref. (a) P 25)

2 years high school.
High-school graduate.
Nursing experience.

CERTIFICATE IN NEUROPSYCHIATRY CLERICAL PROCEDURES (Ref. (a) P 26)

2 years high school.
Typing.
Shorthand.
High-school graduate.
Office experience.

CERTIFICATE IN OCCUPATIONAL THERAPY (Ref. (a) P 27)

High-school graduate.
2 manual skills (e.g., weaving, pottery, printing, etc.)
College training.
Teacher training.
Related work (e.g., atypical children, blind, deaf, etc.)

CERTIFICATE IN OPERATING ROOM TECHNIC (Ref. (a) P 29)

2 years high school.
Hospital experience.

PHARMACIST'S MATES CERTIFICATE (Ref. (a) P 30)

PhM2/c - men only.
2 years high school.
Age 22 to 35 years.
Emotionally stable.
PhM1/c.
High-school graduate.
First-aid experience.
College training.

CERTIFICATE IN PHARMACY CHEMISTRY (Ref. (a) P 31)

Discontinued until further notice.

CERTIFICATE IN PHYSICAL THERAPY (Ref. (a) P 32)

2 years high school.
High-school graduate.
Related experience.

CERTIFICATE IN PROPERTY & ACCOUNTING (Ref. (a) P 34)

High-school graduate.
Typing.
Office experience.
Business-high-school graduate.
College training.
Bookkeeping or/and accounting training.

CERTIFICATE IN SUBMARINE SERVICE (Ref. (a) P 35)

High-school graduate.
Physically qualified - men only.
Volunteer.
PhM2/c (qualified for PhM1/c).
Emotionally stable.
Age 22 to 30 preferred. Well-qualified men up to 36 years of age may be selected.
Minimum requirements as published in current BuPers instructions.
PhM1/c.
Graduate of Hospital Corps School (intermediate course).
First-aid experience.
Experience on duty independent of a medical officer.

CERTIFICATE IN X-RAY TECHNIC (Ref. (a) P 36)

High-school graduate.
Mechanically inclined.
College training.
High-school or college courses in physics.
Photography experience (commercial or as hobby).
Mechanical ability.